AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A semiconductor device comprising a $B_{1-x-y-z}In_xAl_yGa_zN(0\leq x\leq 1, 0\leq y\leq 1, 0\leq z\leq 1)$ alloy epitaxial film having 4H-polytype structure formed ~~on~~ in contact with a substrate having 4H-type structure.

2. (Original) The semiconductor device according to claim 1, wherein the substrate is silicon carbide.

3. (Currently amended) The semiconductor device according to claim 1, wherein said $B_{1-x-y-z}In_xAl_yGa_zN$ $(0\leq x\leq 1, 0\leq y\leq 1, 0\leq z\leq 1)$ alloy epitaxial film is formed ~~on~~ in contact with a substrate having (11-20) face.

4. (Original) The semiconductor device according to claim 1, wherein said $B_{1-x-y-z}In_xAl_yGa_zN$ $(0\leq x\leq 1, 0\leq y\leq 1, 0\leq z\leq 1)$ alloy epitaxial film comprises AlN.

5. (Original) The semiconductor device according to claim 1, wherein a number of group III atoms are equal to a number of nitrogen atoms on a surface of said $B_{1-x-y-z}In_xAl_yGa_zN$ $(0\leq x\leq 1, 0\leq y\leq 1, 0\leq z\leq 1)$ alloy epitaxial film.

6. (Currently amended) An optoelectronic device comprising,

~~a GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure formed over a substrate having 4-H type structure and a waveguide formed on said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure, and

wherein said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure include an n-type layer, a p-type layer and an active layer, said active layer being formed between said n-type layer and said p-type layer.

7. (Original) The optoelectronic device according to claim 6, wherein a plurality of layers being formed between said waveguide and said substrate have 4H-type structure.

8. (Original) The optoelectronic device according to claim 6, wherein said substrate having 4-H type structure is SiC.

9. (Currently amended) The optoelectonic device according to claim 6, wherein said ~~GaN-based~~ III-V Nitride semiconductor ~~alloy~~ epitaxial ~~film~~ layer is formed ~~on~~ in contact with a substrate having (11-20) face.

10. (Currently amended) The optoelectonic device according to claim 6, wherein said ~~GaN-based~~ III-V Nitride semiconductor ~~alloy~~ epitaxial ~~film~~ layer comprises AlN.

11. (Currently amended) The optoelectonic device according to claim 6, wherein a number of group III atoms are equal to a number of nitrogen atoms on a surface of said ~~GaN-based~~ III-V Nitride semiconductor ~~alloy~~ epitaxial ~~film~~ layer.

12. (Original) The optoelectronic device according to claim 6, wherein said waveguide is formed as a straight line perpendicular to either (0001) face or (1-100) face.

13. (Currently amended) The optoelectronic device according to claim 6, further comprising AlN layer having 4H type structure between said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and said substrate having 4-H type structure.

14. (Currently amended) The optoelectronic device according to claim 13, further comprising an n-type region formed in said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and in contact with said AlN layer having 4H type structure.

15. (Original) The optoelectronic device according to claim 13, further comprising no epitaxial region is contact with a side surface of said AlN layer having 4H type structure.

16. (Currently amended) The optoelectronic device according to claim 6, further comprising conductive AlGaN layer having 4H type structure between said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and said substrate having 4-H type structure.

17. (Original) The optoelectronic device according to claim 6, where said substrate having 4-H type structure exhibits p-type conduction.

18. (Currently amended) The optoelectronic device according to claim 6, further comprising a first contact is formed ~~on~~ in contact with said waveguide and a second contact is formed under said substrate having 4-H type structure.

19. (Original) The optoelectronic device according to claim 18, wherein the first contact and the second contact includes Ni.

20. (Original) The optoelectronic device according to claim 18, wherein the first contact includes Ti and the second contact includes Al.

21. (Currently amended) A semiconductor device comprising,

~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure formed over a substrate having 4-H type structure and an electrode formed over said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure, and

wherein said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure include an n-type layer, a p-type layer.

22. (Original) The semiconductor device according to claim 21, wherein a plurality of layers being formed between said electrode and said substrate have 4H-type structure.

23. (Original) The semiconductor device according to claim 21, wherein said substrate having 4-H type structure is SiC.

24. (Currently amended) The semiconductor device according to claim 21, wherein said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film is formed ~~on~~ in contact with a substrate having (11-20) face.

25. (Currently amended) The optoelectonic device according to claim 21, wherein said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film comprises AlN.

26. (Currently amended) The optoelectonic device according to claim 21, wherein a number of group III atoms are equal to a number of nitrogen atoms on a surface of said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film.

27. (Currently amended) The optoelectronic device according to claim 21, further comprising AlN layer having 4H type structure between said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and said substrate having 4-H type structure.

28. (Currently amended) The optoelectronic device according to claim 21, further comprising conductive AlGaN layer having 4H type structure between said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and said substrate having 4-H type structure.

29. (Original) The semiconductor device according to claim 21, where said substrate having 4-H type structure exhibits p-type or n-type conduction.

30. (Currently amended) A semiconductor device comprising,

~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure formed over a substrate having 4-H type structure, and a gate electrode, a source electrode and a drain electrode formed on said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure, and

. wherein said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure include an conductive layer, an undoped layer.

31. (Original) The semiconductor device according to claim 30, wherein a plurality of layers being formed between said gate electrode and said substrate have 4H-type structure.

32. (Original) The semiconductor device according to claim 30, wherein said substrate having 4-H type structure is SiC.

33. (Currently amended) The semiconductor device according to claim 30, wherein said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film is formed ~~on~~ in contact with a substrate having (11-20) face.

34. (Currently amended) The optoelectonic device according to claim 30, wherein said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film comprises AlN.

35. (Currently amended) The optoelectonic device according to claim 30, wherein a number of group III atoms are equal to a number of nitrogen atoms on a surface of said ~~GaN-based~~ III-V Nitride semiconductor alloy epitaxial film.

36. (Currently amended) The optoelectronic device according to claim 30, further comprising AlN layer having 4H type structure between said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure and said substrate having 4-H type structure.

37. (Currently amended) The semiconductor device according to claim 30, wherein said AlN layer having 4H type structure includes an undoped layer and said undoped layer in contact with said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure.

38. (Original) The semiconductor device according to claim 30, wherein said n-type layer is contacted to said gate electrode, said source electrode and said drain electrode.

39. (Currently amended) The semiconductor device according to claim 30, where said ~~GaN-based~~ III-V Nitride semiconductor epitaxial layers having 4H-polytype structure have a modulation-doped structure.

40-49 (Cancelled)